

University of Groningen

Electrically induced neuroplasticity

Nuninga, Jasper

DOI:
[10.33612/diss.149053115](https://doi.org/10.33612/diss.149053115)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Nuninga, J. (2021). *Electrically induced neuroplasticity: Exploring the effects of electroconvulsive therapy for depression using high field MRI*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.149053115>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

ELECTRICALLY INDUCED NEUROPLASTICITY

**Exploring the effects of electroconvulsive therapy for
depression using high field MRI**

Jasper Olivier Nuninga

Colofon

Electrically induced neuroplasticity

Exploring the effects of electroconvulsive therapy for depression using high field MRI

Cover: Kazuma Eekman

Printing: Ridderprint: www.ridderprint.nl

Copyright © Jasper O. Nuninga, 2021

All rights reserved. No part of this thesis may be reproduced or transmitted in any form or by any means, without prior written permission from the author. The copyrights of articles that have been published have been transferred to the respective journal.



university of
 groningen

Electrically induced neuroplasticity

Exploring the effects of electroconvulsive therapy for depression
 using high field MRI

PhD thesis

to obtain the degree of PhD at the
 University of Groningen
 on the authority of the
 Rector Magnificus Prof. C. Wijmenga
 and in accordance with
 the decision by the College of Deans.

This thesis will be defended in public on

Monday 4 January 2021 at 14.30 hours

by

Jasper Olivier Nuninga

born on 15 January 1994
 in Rotterdam

Supervisor

Prof. dr. I.E.C. Sommer

Co-supervisor

Dr. R.C.W. Mandl

Assessment Committee

Prof. dr. R.C. Oude Voshaar

Prof. dr. U.L.M. Eisel

Prof. dr. N.J.E.M. van Haren

TABLE OF CONTENTS

CHAPTER 1	A general introduction to the thesis	7
CHAPTER 2	Immediate and long-term effects of bilateral electroconvulsive therapy on cognitive functioning in patients with a depressive disorder	21
CHAPTER 3	Volume increase in the dentate gyrus after electroconvulsive therapy in depressed patients as measured with 7T	47
CHAPTER 4	A collection of letters	77
CHAPTER 5	Vasogenic edema versus neuroplasticity as neural correlates of hippocampal volume increase following electroconvulsive therapy	89
CHAPTER 6	Shape and volume changes of the superior lateral ventricle after electroconvulsive therapy	109
CHAPTER 7	A general discussion and summary of the thesis	127
APPENDIX		141

